CONFERENCE ON LIFE IN THE UNIVERSE

A meeting to explore prospects for research
into the nature and distribution of life in the Universe

June 19 and 20, 1979

NASA Ames Research Center

General Chairman: John Billingham

PRELIMINARY AGENDA

June 19

ORIGIN AND EARLY EVOLUTION OF LIFE IN THE GALAXY

Chairman: Richard Young

9:00 a.m.	Welcome	
9:05 a.m.	Introduction	
9:15 a.m.	Cosmic Evolution An overview of the concept of cosmic evolution from the origin of matter to the rise of civilizations.	Eric Chaisson
9:45 a.m.	Organic Chemical Evolution A review of chemical evolution emphasizing the environmental circumstances under which progressively more complex organic molecules will arise, with special attention to competing reactions and the conditions which govern reaction rates.	Sherwood Chang
10:10 a.m.	Biogenesis A discussion of the development of unicelluar organisms from self-replicating molecular systems, with emphasis on environmental considerations.	Alexander Rich
10:35 a.m.	COFFEE	

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		Lynn Margulis
10:55 a.m.	Evolution of the Biosphere A discussion of the origin and evolution of planetary atmospheres and hydrospheres, including biological influences thereon.	
11:20 a.m.	Contributed Papers	
12:00 noon	LUNCH	

AFTERNOON SESSION

		Adrienne Timothy
1:30 p.m.	Stellar Influences A discussion of stellar characteristics and dynamics potentially related to the origin and evolution of life, including luminosity, spectral energy distribution, flares, spot activity, winds, and variability.	
1:55 p.m.	Orbit Stability A discussion of the formation and longevity of planets in multiple star systems.	Robert Harrington
		Carl Turekian
2:20 p.m.	The Origin and Evolution of Continents and Oceans A discussion of the development and stability of large contiguous land masses amidst bodies of water, including an evaluation of the importance of planet-specific factors.	
2:45 p.m.	COFFEE	
3:05 p.m.	Other Planetary Systems An outline of prospects for the detection of extrasolar planets and the measurement of their gross physical characteristics.	David Black
3:30 p.m.	Contributed Papers	
4:55 p.m.	Adjourn	
6:00 p.m.	DINNER	
7:30 p.m.	Biogeocosmopoetry: Major Events in the Evolution of Life on Earth and Speculations Regarding their Possible Relevance to Extraterrestrial Evolution.	J. William Schopf

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8:15 p.m. Panel Discussion

Philip Morrison, Chairman	H. Masursky
Helmut Abt	John Oro
A. J. Boucot	Tobias Owen
A. G. W. Cameron	Richard Wetherald

10:00 p.m. Adjourn

June 20

THE EVOLUTION OF COMPLEX LIFE IN THE GALAXY

8:30 a.m.	Introduction	John Billingham
8:35 a.m.	The Emergence and Radiation of Multicellular Organisms A discussion of the origin, evolution, and adaptability of various phylum-level biological strategies, including the importance of particular specialized organs and systems to the exploitation of different environmental opportunities.	James Valentine
9:00 a.m.	Biological Evolution A discussion of the evolution of complex organisms and ecosystems, with emphasis on factors responsible for its rate and direction.	Dale Russell
9:25 a.m.	Evolution of Technological Species A discussion of the co-development of intelligence, manipulative ability, and social organization, with emphasis on environmental conditions required.	Bernard Campbell
9:50 a.m.	COFFEE	
10:10 a.m.	Climatological Stability A discussion of planetary characteristics which influence climate change, such as ocean currents, albedo, atmospheric composition, and variations in planetary motions.	Donald Hunten

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10:35 a.m.	Astrophycical Influences A discussion of cosmic phenomena that might influence the rate and direction of biological evolution, including the evolution of the parent star, nearby supernovae, passage through galactic dust clouds, and violent activity in the galactic nucleus.	Wallace Tucker
11:00 a.m.	Contributed Papers	
12:00 noon	LUNCH	

THE DETECTABILITY OF TECHNOLOGICAL CIVILIZATIONS

Chairman: Frank Drake

1:15 p.m.	The Identifiability of Suitable Stars A discussion of problems in the determination of important stellar characteristics, including temperature, luminosity, age, and chemical composition.	Kenneth Janes
1:40 p.m.	Manifestations of Advanced Civilizations A survey of possible characteristics of advanced technologies that might be observable across interstellar distances, including the possiblilty of deliberate communications.	Ronald Bracewell
1:55 p.m.	Search Strategy An analysis of the scientific and technological considerations which underlie a choice of search strategy.	Bernard Oliver
2:20 p.m.	COFFEE	
2:40 p.m.	The Radio Signature of Earth An analysis of how Earth would appear to a nearby extraterrestrial civilization at radio frequencies and what that civilization might learn from observing it.	Woodruff Sullivan, III
3:00 p.m.	Sky and Frequency Surveys An outline of a practical program to search for powerful radio transmitters by using an all-sky, broad-frequency survey.	Robert Edelson

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3:30 p.m.	High Sensitivity Observations An outline of a practical program intended to search for radio signals from extraterrestrial civilizations by maximizing sensitivity.	John Wolfe

CONCLUDING EVENTS

4:00 p.m.	Reflections	Philip Morrison
4:30	Adjourn	